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95-499 E & 95-499.1 E
November 17, 1997

associated with a former steel manufacturing operation on the site, and for the storage of farm equipment (Crawford, B. 1995).

2.3 Description of Structures and Utilities - Six large interconnected structures were on the site. The first was a two story, concrete structure with a full basement built in 1920± and known as the "Manufacturing and Office" building (United Appraisal, 1976). The second structure was called the "Forge Shop". This was a high, one story brick building and was connected to the north side of the Manufacturing and Office building. The Forge Shop was built in 1900± (United Appraisal, 1976). The third structure was a high, one story building with the roof missing known as "The Old Boiler House". This structure was connected to the west side of the Forge Shop and was built in 1900± (United Appraisal, 1976). The fourth structure was two stories, concrete and called the "Melt Building". This structure was connected to the east side of the "Manufacturing and Office Building" and was built in 1920± (United Appraisal, 1976). The fifth structure was two story, brick and called the "Storage and Manufacturing Building". The structure was connected to the southeastern corner of the "Melt Building" and was built in 1910± (United Appraisal, 1976). The sixth structure was one story, steel framed and called the "Press Building". The structure was connected to the south end of the "Melt Building" and was built in 1950± (United Appraisal, 1976).

Water to the site is supplied by the Portland Water District (Crawford, B. 1995). Sewer disposal consists of a holding tank that is periodically pumped out (Crawford, B. 1995). Electrical service is supplied by Central Maine Power Company (Crawford, B. 1995).

2.4 Site and Vicinity Characteristics - The site is part of an urban residential and historic industrial area. The operation of manufacturing mills at the site has been documented as far back as the 1700's. Single and multi-unit residential housing exists

northwest and east of the site. A railroad line is located east of the site. An automobile repair facility and building supply company are located north of the site, while a hydroelectric generating facility is adjacent south of the site.

2.5 Past Uses of the Site - The site has historically been used for industrial purposes. A sawmill existed on the site in 1756 and was succeeded by a small grist mill and small carding mill (Dole, S. 1909). A large pulp mill built on the site in 1875 manufactured "wood board" (Dole, S. 1909). A steel manufacturing facility was later operated at the site and ceased operation in 1977 (Crawford, B. 1995). A post office was formerly on the site adjacent to Route 202 (Bartow, B. 1995 and Beers Atlas, 1871).

2.6 Past and Current Uses of Adjoining Properties - The property adjacent to the site in an easterly direction is a Central Maine Railroad right-of-way and has been a railroad right-of-way since at least 1871 (Town of Windham, 1995 and Beers Atlas, 1871). The adjacent property northeast of the site is now or formerly a coal and fuel oil business (Town of Windham, 1995 and Timmons, R. 1995). A railroad depot existed on the property in 1871 (Beers Atlas, 1871). The small lot bordering the site in a northerly direction is now and was formerly used for residential purposes (Crawford, B. 1995). The adjacent property northwest of the site is currently a market/restaurant that also contains residential housing. It was the site of tenement housing and a tavern in the 1800's (Dole, S. 1896 and Bartow, B. 1995). The property adjacent to the site in a southerly direction is now and formerly has been a hydroelectric generating facility (Town of Windham, 1995 and Googins, A. 1995). A dam existed on that property as early as 1871 (Beers Atlas, 1871).

A list of current landowners who bound the site is presented in Table 1 (Town of Windham, 1995).

Table 1
Adjacent Landowners

<u>Owner</u>	<u>Relative Location From Site</u>	<u>Map and Lot</u>
Merrill & Carmella Laskey	NE	Map 38, Lot 6
Trustees of Freida and James Deane	N	Map 38, Lot 8
William and Patricia Dilio	NW	Map 38, Lot 9
S.D. Warren Co.	SW	Map 38, Lot 10
S.D. Warren Co.	W	Map 38, Lot 8A
Central Maine Railroad	E	Map 38, Lot 3B

3.0 RECORDS REVIEW

3.1 Standard Federal and State of Maine Environmental Record Sources - We obtained and reviewed records and databases from the U.S. Environmental Protection Agency (EPA) and the State of Maine Department of Environmental Protection's (DEP) Division of Site Inspection and Remediation (DOR) Bureau of Remediation and Waste Management (BRWM).

3.1.1 EPA Lists - We reviewed the EPA's National Priorities List (NPL); CERCLIS List; RCRA Treatment, Storage, and Disposal (TSD) List; RCRA Generators List, and the Emergency Response Notification System (ERNS) for facilities listed within the radii noted in Section 1.1. We did not find any listed facility.

3.1.2 Uncontrolled Hazardous Substances Sites Program List - We reviewed the

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

DEP BHMSWC Uncontrolled Hazardous Substances Sites Program List for the Town of Windham. We found one facility listed within a 1.0 mile radius of the site. The Maine Correctional Center on River Road is located 3/4 mile east of the site. The facility was listed as having a status of "no action" by the Federal Government, and "no further action" by the State of Maine.

3.1.3 Solid Waste Facility List - We reviewed the DEP BRWM Solid Waste Facility List. Two solid waste facilities were listed for the Town of Windham, but both were greater than 4.0 miles northeast of the site.

3.1.4 BRWM Registered and Removed Underground Storage Tanks (UST's) - We reviewed a list of BRWM Registered UST's for the Town of Windham. We did not find registered UST's listed for the site. One (1) 550 gallon capacity gasoline UST was listed as registered for the Energy Depot, the adjacent property northeast of the site. Several registered UST's were listed for properties within 0.5 mile of the site.

We reviewed a list of BRWM Removed UST's from the DEP for the Town of Windham. We did not find removed UST's listed for the site. A 3000 gallon capacity UST containing an unknown product and a 500 gallon capacity UST containing gasoline were listed as removed from the Energy Depot property. We found several UST's listed as removed for properties within 0.5 mile of the site. Appendix E contains a list of registered and removed UST's for the Town of Windham.

3.1.5 Spill Reports - We reviewed Oil and Hazardous Materials Spill Report records for facilities located within approximately 0.5 mile of the site and found one spill report for an incident that occurred at the site. Spill report P-206 for 1994 indicated that #6 oil was discovered adjacent to the site in a concrete storm drain junction box on Depot Street.

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

The possible source of the oil was attributed to storage tanks at the site. The spill report also documents eleven storage containers at the site in 1994 that contained approximately 4370 gallons of #2 fuel oil, #4 fuel oil, #6 fuel oil and oil/water mixtures. We found several spill reports for incidents that occurred within 0.5 mile of the site. These incidents are summarized in Table 2.

Table 2

<u>Spill #</u>	<u>Facility</u>	<u>Description</u>	<u>Location From Site</u>
P-462-86	Ballard Oil	Investigation of abandoned UST's	1/2 Mile S
P-463-86	Clean-O-Rama	Investigation of abandoned UST believed to be approximately 20 years old	1/10 Mile S
P-246-88	28 Depot Street	Spill of #2 fuel oil in basement of house. 6200+ gallons of oil and water removed, 2 to 4 yd ³ contaminated soil landspread near house	1/8 Mile NE
P-257-91	Lampron's Mini-Mart	Contaminated soil discovered during removal of UST's. Contaminated soil removed and landspread at Gorham Public Works Garage	1/4 Mile S

Copies of the spill reports are included in Appendix F.

3.2 Physical Setting - We obtained and reviewed published maps from the Maine Geological Survey (MGS), the USDA Natural Resources Conservation Service (NRCS), and the USDI Geological Survey that include the area of the site.

3.2.1 MGS Maps - According to the MGS Sand and Gravel Aquifer Map, the closest mapped sand and gravel aquifer to the site is approximately 0.6 mile to the southeast. Although no sand and gravel aquifers were mapped for the site, unmapped sand and

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

gravel aquifers may be present that did not meet the criteria used by the MGS.

According to the MGS Freshwater Wetlands Map, no freshwater wetlands exist on or near the site. Unmapped wetlands may be present that did not meet the criteria used by MGS.

According to the MGS Surficial Geologic Map, the area of the site is mapped as glacial till. Glacial till is a heterogeneous mixture of sand, silt, clay and stones.

According to the MGS Bedrock Geologic Map of Maine, bedrock in the area of the site is mapped as interbedded pelite and sandstone of the Waterville formation.

3.2.2 NRCS Soil Survey - According to the Soil Conservation Service (now the NRCS) Soil Survey Map of Cumberland County, the soils at the site are mapped as cut and fill land and scantic silt loam.

3.2.3 USGS Topographic Map - The site is on the USGS 7.5 Minute Gorham, Maine Quadrangle Topographic Map. According to this map, the site is within a primarily populated area that slopes to the south and west towards its border with the Presumpscot River.

3.3 Historical Use Information - We reviewed historic aerial photographs and land title records that cover the area of the site.* We also researched historic publications at the Windham Public Library and historic maps and records at the Windham Historical Society. We searched for additional sources such as historic assessment records and Sanborn Fire Insurance Maps, but they either do not exist or were unavailable.

3.3.1 Review of Aerial Photographs - We obtained and reviewed three sets of aerial photographs that cover the area of the site from the James W. Sewall Company of Old Town, Maine.

1953 Set of Aerial Photographs - This black and white set of aerial photographs (1" = 2000'), dated June 2, 1953, showed the site to be on the northerly side of the Presumpscot River. Route 202 (Main Street) was visible as a north - south oriented road west of the site. The bridge on Route 202 connecting Windham to Gorham was visible over the Presumpscot River. Depot Street was visible as a west - east oriented road bordering the northern end of the site. Several large, interconnected buildings were on the site. Three of the structures partially bordered on the Presumpscot River. The eastern most structure was bordered to the east by a set of railroad tracks that ran north to south. A rectangular structure visible in the river adjacent to the site is known to be a hydroelectric generating facility. The ground cover in northern and western sections of the site appeared to be mostly gravel. A few trees were adjacent to Depot Street. The southeastern end of the site appeared mostly grassed with a few large trees. Two dirt trails connected the southern most structure on the site with the southeastern end of the site.

Properties in the site vicinity along Route 202 appeared mostly residential. Large tracts of agricultural property were approximately 1.0 mile west and 1.0 mile east of the site.

1976 Set of Aerial Photographs - This black and white set of aerial photographs (1" = 1000'), dated May 1, 1976, showed that the southwestern most interconnected structure seen on the site in the 1953 photographs no longer existed. The area occupied by the structure now appeared vacant and void of vegetation. The northern most interconnected structure also was no longer visible. The area occupied by that structure now appeared

vacant and grassed. The remaining structures on the site appeared much as they did in 1953. Four railroad cars were on the tracks southeast of the site.

A rectangular shaped structure was parallel to the railroad tracks in a grassed area at the southeastern end of the site. Our research indicates that the object was a garage. Several small piles were north of the buildings on the site. Two unpaved roads extended onto the site from Depot Street and ended at the eastern end of the site near the railroad tracks. No vehicles were visible on the site.

1995 set of Aerial Photographs - This black and white set of aerial photographs (1" = 1000'), dated April 25, 1995, showed the site much as it did in the 1976 set of aerial photographs. Exceptions were that the roof of the western most structure on the site was not present, and the garage seen at the southeastern end of the site was gone. Two box trailers were on a gravel parking area west of the buildings on the site.

3.3.2 Land Title Records - We reviewed site ownership records supplied to us by Barnard-Marquit Corporation. We reviewed additional records at the Cumberland County Registry of Deeds in Portland, Maine. The site is now or formerly owned by Barnard-Marquit Corporation. Past owners of the site and date of transfer include those shown in Table 3.

Table 3 Site Ownership	
<u>Owner</u>	<u>Year of Transfer</u>
Lawrence J. Keddy	1993
National Metal Converters	1975
Lawrence J. Keddy	1974

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

Park Corporation	1973
Grinnell Corporation	1969
Keddy Manufacturing Co.	1961
Atlantic Mills, Inc.	1954
Fox	1953
Weiland	1953
Maine Steel	1945
Windham Fibres, Inc.	1945
Cumberland Securities Corporation	1940
Androscoggin Pulp Co.	1900

3.3.3 Windham Public Library - We reviewed historical references at the Windham Public Library. A sawmill was built on the site by Major William Knight sometime prior to 1756 (Dole, S. 1909). The sawmill was successful for many years, and then the site remained unoccupied for a number of years except for two small buildings erected by Jonathan Andrew (Dole, S. 1909). One of the buildings was used as a grist mill and run by William Johnson, while the other building was a carding mill operated by Leonard Bacon and afterwards by Lathrop Crockett (Dole, S. 1909). In 1875, the water power rights on both sides of the Presumpscot River were purchased by C.A. Brown and Company, who built a large mill made of brick on the site and manufactured a product called "Wood Board" (Dole, S. 1909). Shortly after the death of Mr. Brown, the property was purchased by the Androscoggin Pulp Company, who "erected a large addition to the old mill, built of concrete and iron, have furnished it with the latest and most approved kinds of machinery, and give steady employment to a large number of workmen" (Dole, S. 1909).

3.3.4 Windham Historical Society - We reviewed historical records and maps at the Windham Historical Society. William Knight had a sawmill on the site that was built sometime prior to 1756 (Dole, S. 1896). The mill operated until 1822, when a company from Portland purchased the falls on both sides of the Presumpscot River, built a new dam, and constructed a large cotton mill opposite the site in Gorham (Dole, S. 1896). In the succeeding years, a small grist mill and small carding mill operated on the site (Dole, S. 1896). In 1846 or 1847 another sawmill was built on the site by I. Leighton and Freeman Harding. The sawmill operated for 5 or 6 years before being dismantled and rebuilt down river (Dole, S. 1896). The site then remained vacant until 1875, when a large mill built of brick was constructed by C.A. Brown & Co. for the manufacture of Wood - Board (Dole, S. 1896).

A map of the site titled: "Little Falls, Towns of Windham and Gorham", published by Beers Atlas, indicates that the site was vacant in 1871. Depot Street north of the site was designated as Cross Street in 1871. Three structures are shown bordering the north side of the site along Cross Street. They are designated as a carriage manufacturing shop belonging to F.A. Cloudman, a "proprietary" belonging to A. Johnston, and a residence belonging to W. Bickford. A structure designated as a Post Office is shown adjacent to Main Street at the west end of the site. Railroad tracks of the "Portland & Ogdenburg R.R." are shown bordering the site in an easterly direction. A dam is shown in the Presumpscot River adjacent to the site in a southerly direction.

4.0 SITE RECONNAISSANCE AND OBSERVATION OF HAZARDOUS SUBSTANCES

4.1 Site Reconnaissance - We made a site reconnaissance on September 26, 1995 and October 20, 1995. We were accompanied on a tour of the structures by Mr. Bruce Crawford, who is employed by Barnard-Marquit Corporation. A site features plan is

attached as Sheet B-2.

4.1.1 Structures and Yard - The main access road to the site was a gravel drive leading east from Route 202 at the western end of the site. The gravel drive also was part of a 30 foot wide right-of-way that allowed access to the hydroelectric generating plant located on the Presumpscot River adjacent to the site. A northerly branch of the drive allowed access to the site from Depot Street. The portion of the site north and west of the gravel drive was mostly grassed with a few large trees. The drive ended at the west end of the Manufacturing and Office building. A remnant brick wall was south of the drive adjacent to the Presumpscot River. The wall was part of a mill building that burnt in the 1950's (Crawford, B. 1995). A metal water valve and metal pipe were north of the drive adjacent to the west side of the Old Boiler House. The valve and pipe were remnants of a fire hydrant system that serviced the mill buildings (Crawford, B. 1995). A large, circular brick chimney was adjacent to the west side of the Old Boiler House. A pile of asphalt roofing debris and a remnant concrete foundation wall were near the base of the chimney. The north end of the site between Depot Street and the mill buildings was mostly grassed and relatively flat. A steep, down gradient slope to the south existed adjacent to the north sides of the Old Boiler House and the Forge Shop, and approximately 120 feet north of the Melt Building. Fill materials including metal pieces, wood, slag, bricks and flattened metal drums were visible on the sides of the slope areas. A concrete pad and a remnant concrete wall were north of the Old Boiler House. A circular area approximately 6 feet in diameter and void of vegetation was north of the Forge Shop.

A concrete pad and pieces of steel rebar were in the ground northeast of the Forge Shop.

The area between the north side of the Melt Building and the base of the slope was partially concrete paved and relatively flat. We observed the following features in this

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

area: a storm drain covered with a metal grate, a concrete culvert, farm equipment, steel beams, a metal tank, a concrete tile in the ground, a remnant concrete pad, an old wagon and a steel loading dock.

A gravel road with a gate across it led from Depot Street at the northeast corner of the site to a concrete loading dock on the north end of the Storage and Manufacturing Building. Metal bins, a concrete pier, a brick fill pile, several metal drums and a metal pipe were west of the road. The metal bins were used for transporting steel billets inside the steel mill (Crawford, B. 1995). A metal water valve and a metal culvert were east of the road. A concrete retaining wall and a concrete tile were west of the Storage and Manufacturing Building loading dock. A branch of the gravel road led around the east side of the Storage and Manufacturing Building. Three concrete cradles were west of the branch road. The cradles supported former above ground storage tanks that contained oil (Crawford, B. 1995).

The road continued to the south end of the Press Building. A large steel frame structure was adjacent to the east side of the Press Building. The structure was an overhead hoist used for unloading scrap steel from railcars (Crawford, B. 1995). The scrap steel was melted down in the steel mill and re-forged into steel billets (Crawford, B. 1995). An old rail spur was below the hoist and entered the open south end of the Storage and Manufacturing Building. Several small railcars were on the rail spur inside the building. Two empty 55 gallon capacity metal drums were adjacent to the southeast corner of the Press Building. A pole-mounted transformer was south of the Press Building. A concrete walkway adjacent to the west side of the Press Building ended at a door on the south side of the Melt Building. The basement of the Melt Building was built partially over the Presumpscot River. A sump in the concrete floor had river water running through it. The basement floor rested directly on ledge (Crawford, B. 1995). Several piles of steel billets

were on the floor. The first floor, (mid level) of the structure, contained a compressor room. Several one quart cans of motor oil were in the room. A large hammer for forming steel was also on the first floor. The second floor (upper level) of the Melt Building was used for storage. We observed items including: steel, farm equipment, a truck, a generator, a furnace, 55 gallon capacity plastic barrels, containers of hydraulic fluid, steel melting pots and other steel manufacturing equipment. A pile of metal fencing was between the walkway and the Press Building, and an obsolete utility pole was west of the walkway. The first and second floors of the storage and manufacturing building were used for the storage of miscellaneous items associated with the former steel mill including: steel, bricks, wood and machinery.

An electrical substation consisting of three large transformers on a concrete pad inside a metal fence was adjacent to the Melt Building west of the walkway. The substation formerly supplied electricity to the steel mill, but is no longer in use (Googins, A. 1995). The Presumpscot River flows beneath the Melt Building west of the substation. Overhead utility lines entered the south side of the Melt Building near the substation. The utility lines were on poles that were on the southeast bank of the Presumpscot River on property adjacent to the site. A remnant concrete pad and a debris pile containing bricks, concrete pieces and metal was below the utility lines on the adjacent property.

The first floor of the Manufacturing and Office Building contained a utility shop. A lathe, steel pieces, bags of sand blast grit and containers of paint were among items inside the shop. The shop is used for the manufacturing and repair of materials used in various hydrodams owned by Lawrence Keddy (Crawford, B. 1995). A 275± gallon capacity above ground storage tank and a 55 gallon capacity metal drum were on the floor inside the shop. The tank and drum contain #2 fuel oil used for the furnace that heats the shop (Crawford, B. 1995). The second floor of the building contained rooms that were formerly

used as offices for the steel mill (Googins, A. 1995). Several bags labeled "Kast-O-Lite" were on the floor, along with wood patterns and hard hats. The bags of "Kast-O-Lite" may have been used for lining melt furnaces during the manufacture of steel billets (Crawford, B. 1995). The basement of the building was used for storage of former steel mill equipment. The first and second floors of the Storage and Manufacturing Building were used for the storage of miscellaneous items associated with the former steel mill including: steel, bricks, wood and machinery.

The Forge Shop contained the roller room for the former steel mill. Several large rotary furnaces were at the west end of the shop. The furnaces were fired by bunker oil and used for remelting steel during operation of the steel mill (Crawford, B. 1995).

The Old Boiler House was in very poor structural condition. Six (6) large steel above ground storage tanks encased by brick were inside the building. The tanks appeared to be empty. Bunker oil was pumped from some of the tanks and removed from the site in 1994 (Crawford, B. 1995). The tanks had steel piping protruding from their tops that was connected to other steel piping inside the building.

A one story addition on the east side of the building contained the end of the rail spur mentioned previously, and a farm wagon.

4.1.2 Forested Areas - The southeastern end of the site, adjacent to the Presumpscot River and west of the railroad line, was mostly wooded. The rail spur extended south from the overhead hoist through the wooded area and connected to the rail line south of the site. A concrete pad and debris including wood, metal and rubber tires was near the center of the wooded area. This was the location of a garage that once existed on the site (Crawford, B. 1995). A large metal object was north of the former garage. The object

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

may have been a large hammer used in the steel mill (Crawford, B. 1995). A woodchip and wood shavings pile and several lengths of cast iron pipe were in a grassed area on the north edge of the forested area.

4.2 Potentially Hazardous Substances in Connection with Identified Uses - Sources of potentially hazardous substances include fuel oil used for heating purposes and paints and cutting oil used in the machine shop. Other potentially hazardous substance are hydraulic fluid used in forklifts within the machine shop, metals in slab produced during steel manufacturing, and solvents used in historic manufacturing processes at the site.

4.3 Hazardous Substance Containers and Unidentified Substance Containers - We observed numerous small quantity containers including, but not limited to, 1 gallon cans of paint, 5 gallon cans of hydraulic fluid and cutting oil, and a 55 gallon capacity drum containing #2 fuel oil inside the machine shop. Several one quart cans of motor oil were in the compressor room in the Melt Building. 5 gallon cans of hydraulic fluid were stored on the second floor of the Melt Building.

4.4 Storage Tanks - We observed a 275± gallon capacity #2 fuel oil tank used to store oil for heating purposes in the Machine Shop. Several empty, brick encased, steel tanks were inside the Old Boiler House. The tanks formerly contained bunker oil (Thompson, N. 1995). Concrete cradles at the eastern end of the site adjacent to the railroad line formerly supported above ground storage tanks containing oil (Crawford, B. 1995). A 300± gallon capacity underground storage tank containing gasoline reportedly was removed from near the west side of the Manufacturing and Office Building in the early 1990's (Crawford, B. 1995).

4.5 Indications of PCB's - We observed a pole-mounted transformer, owned by Central

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

Maine Power Company, south of the Press Building. Three (3) large transformers mounted to a concrete pad were also south of the Press Building. The three transformers (owned by Barnard-Marquis Corporation) had not been used for many years (Crawford, B. 1995).

4.6 Indications of Solid Waste Disposal - Test pits excavated at the site indicated that fill materials up to 13 feet thick had been placed in many areas around the site. The fill contained sand, gravel, clay, glass, bricks, wood, metals (rebar, steel shavings, flattened drums, and slag), rubber, asphalt shingles, leather and ash. Much of the fill may have originated from on-site manufacturing processes.

We observed debris piles containing household trash, wood, metal and rubber tires at the southern end of the site.

4.7 Physical Setting Analysis - The site is situated on the northeast bank of the Presumpscot River with site topography sloping generally south and west towards the river. It is possible that contamination from off-site hazardous substances north and east of the site could migrate to the site.

5.0 EXPLORATION AND TESTING

5.1 Exploration - Shaw Brothers Construction, Inc. of Gorham, Maine excavating twenty-four test pit explorations at the site on November 13, 1995. The test pit exploration locations were selected and established in the field by S. W. COLE ENGINEERING, INC. using taped measurements from existing site features. We chose the locations based on observed and documented site features and reported locations of former storage tanks. The approximate test pit exploration locations are shown on Sheet B-2 in Appendix B.

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

Logs of the test pit explorations, based on our observations, are attached in Appendix G. A key to the notes and symbols used on the logs is also included in Appendix G.

The purpose of the test pit exploration program was to obtain soil samples for field testing and analytical laboratory testing. Random sampling was done at each of the test pit explorations. Soils encountered were mostly fill overlying clayey silt and sand overlying bedrock.

5.2 Headspace Analysis - We obtained random soil samples from each test pit and tested the samples by the headspace technique with a PID. Readings up to 710 ppm were measured for samples S-1 through S-3 at Test Pit 5, and readings up to 635 ppm were measured for samples S-1 and S-2 at Test Pit 5A. A reading of 15 ppm was measured for a sample S-1 at Test Pit 17, and a reading of 10 ppm was measured for a sample S-1 at Test Pit 18. The readings for all other samples were non-detect. The results are summarized in the Table in Appendix H. It should be noted that these are direct readings (set numbers were not used) from the PID, which was calibrated with isobutylene gas to 100 ppm.

The headspace analysis was conducted by placing about 250 grams of soil into a one quart zip-type polyethylene bag. The bags were sealed and the samples were agitated for about 30 seconds. The sample was allowed to equilibrate for about 15 minutes. The probe of the PID was then placed through the seal in the bag to draw out a sample of gas and vapor from the headspace between the soil and the bag. The result was then indicated on the PID display. The PID used was a Photovac MicroTIP Model MP-1000 with a 10.6 electron Volt ultraviolet lamp.

5.3 Analytical Testing - We obtained one soil sample at selected depths from each of

S. W. COLE ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS
95-499 E & 95-499.1 E
November 17, 1997

Test Pits TP-5, TP-5A, TP-9, TP-10, TP-11 and TP-24 and submitted them for analytical testing at Environmental Diagnostic Laboratories (EDL) in South Portland, Maine. The samples were transported to EDL by S. W. COLE ENGINEERING, INC. personnel using chain of custody procedures.

The sample from TP-5 was analyzed for TPH-fuel oil using DEP methods. The test result was 8000 milligrams per kilogram (mg/kg), which is equivalent to 8000 parts per million (ppm). The laboratory report indicated that the sample showed the presence of hydrocarbon material of unknown identity, and that the chromatographic "fingerprint" was indicative of heavy molecular weight hydrocarbons. The sample from TP-5A was analyzed for organo-chlorine pesticides and PCB's. The test results were non-detect. The samples from TP-9, TP-10 and TP-11 were analyzed for heavy metals. The test results for copper of 184 mg/kg (PPM) from TP-9 and 779 mg/kg (PPM) from TP-10 were higher than typical ranges of copper in soils. Typical heavy metal values for soils are presented in Table 4.

The test results for all other metals were within typical ranges found in soils.

Table 4
Total Metals Analysis Results (mg/Kg)

Parameter	TP-9	TP-10	TP-11	Typical Values (ppm)
Arsenic	27.0	13.0	19.0	1-50 ¹
Cadmium	7.0	3.0	2.0	.01-7 ¹
Chromium	169.0	44.0	28.0	5-1000 ¹
Copper	187.0	779.0	43.0	2-100 ¹
Lead	111.0	78.0	87.0	2-200 ¹
Nickel	112.0	152.0	38.0	10-1000 ¹

S. W. COLE ENGINEERING, INC.
 GEOTECHNICAL CONSULTANTS
 95-499 E & 95-499.1 E
 November 17, 1997

Silver	ND	ND	ND	<1-1 ⁴ , 2-5 ^{3 and 5}
Zinc	106.0	254.0	29.0	10-300

Notes: Results for Table 4 are reported as mg/Kg, which is equivalent to parts per million (ppm).

ND = Non-Detect

ppm = Parts Per Million

mg/Kg = Milligrams Per Kilogram

¹ Bohn, H., B. McNeal and G. O'Conner. 1979. Soil Chemistry. New York: John Wiley & Sons, p. 295.

² Bohn, H. et al, 1979, p. 278.

³ Shacklette, H.T., and J.G. Boemgen. 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. USGS Prof. Paper 1270. Washington, D.C.: US Govt. Printing Office.

⁴ Smith, I.C., and B.L. Carson. 1977b. Trace Metals in the Environment. Vol. 2: Silver. Ann Arbor, MI. Ann Arbor Science

⁵ For Soils High in Organic Content.

⁶ Alloway, B.S. 1995. Heavy Metals in Soils. 2nd Ed.: Blackie Academic & Professional. Glasgow, U.K., p. 368.

The sample from TP-24 was analyzed for volatile organic compounds and TCL. The test results were non-detect for both parameters. Copies of the laboratory reports are included in Appendix I.

6.0 OBSERVATION AND MONITORING OF REMEDIATION

6.1 Soil Remediation - We observed and monitored the removal of hydrocarbon contaminated soil from the site on April 29, 1996. The contaminated soil had been encountered in Test Pits TP-5 and TP-5A during our exploration phase of the project on November 13, 1995. Nick Hodgkin (MDEP Augusta Office) visited the site at our request on November 20, 1995. We asked Mr. Hodgkin to visit the site due to potential participation of the site in the MDEP VRAP program. Mr. Hodgkin set a Baseline-2 clean